

# Call for Proposals:

## Multi-purpose platform technologies for rapid response against emerging infectious diseases

### Step 1. Expression of Interest

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CEPI is pleased to announce a new funding opportunity for the development of vaccines and other multi-purpose platform technologies against emerging infectious diseases. This document describes the scope, requirements and processes for submission, review, and selection for funding. Further details can be found at [https://cepi.net/get\\_involved/cfps/](https://cepi.net/get_involved/cfps/)

The Call for Proposals is in two parts: Step 1 is an Expression of Interest (the subject of this announcement) and Step 2 is the submission of a full proposal for funding. EOIs may be submitted at any time and the review will occur on a rolling basis. After the review process, EOI applicants may be invited to submit full proposals for funding (Step 2).

In Step 1 of this Call for Proposals, CEPI asks for submissions of Expressions of Interest (EOI) for platform technologies that enable rapid vaccine development, rapid scale-up, and/or rapid induction of immunity or immunoprophylactic benefit for use in outbreaks of known viruses as well as novel or previously unrecognised viruses. These can be novel platforms or existing (proven) platforms where improvements can be made in terms of increased speed, decreased costs and manufacturing scale-up to respond to known and unknown disease threat situations.

This call is open for EOIs from 15 October 2019 to 14 October 2020. The call may be extended or amended depending on programmatic need.

CEPI reviews and evaluates proposals on their merits and in the context of stated eligibility criteria and CEPI's overall project portfolio. Regardless of eligibility at any stage of a funding call, CEPI reserves the right to consider and to decline proposals in its sole discretion.

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## 1. Introduction

Epidemics of emerging infectious diseases (EIDs), such as those listed in the World Health Organization (WHO) “R&D Blueprint for Action to Prevent Epidemics,” are a significant and growing threat to individual life, societies, and general prosperity. At CEPI we envision a world in which epidemics are no longer a threat to humanity. Our contribution to this vision is to accelerate the development of vaccines against EIDs and enable equitable access to these vaccines for people during outbreaks.

CEPI was launched in January 2017 by the governments of Norway, India, the Bill & Melinda Gates Foundation (BMGF), the Wellcome Trust and the World Economic Forum. To date, CEPI has secured over \$750 million funding, with financial support provided by the Bill & Melinda Gates Foundation, the Wellcome Trust, the European Commission, and the governments of Australia, Belgium, Canada, Germany, Japan, Norway and the United Kingdom.

To accomplish its mission, CEPI will:

- Support the development of vaccines and platform technologies that can be rapidly deployed against outbreaks of known and recently emerging pathogens;
- Support the development of investigational vaccine stockpiles of candidate vaccines for deployment into clinical trials when outbreaks occur;
- Promote the development of vaccines that are sustainable for the long term; and
- At every stage of vaccine development, manage our investments in ways that advance our goal of equitable access to vaccines against epidemic diseases.

Since its launch, CEPI has announced three Calls for Proposals (CfPs). The first CfP supports candidate vaccines against the MERS, Nipah, and Lassa viruses. The second CfP was launched to advance rapid response platforms against unknown pathogens. CEPI’s third CfP, issued January 2019, is supporting the development of vaccines against the Rift Valley Fever and Chikungunya viruses. These viruses were chosen from a priority list established by the WHO in its R&D Blueprint for Action to Prevent Epidemics

This Call for Proposals, with Step 1 being an Expression of Interest, builds on and expands the second CfP aimed at rapid response platforms. Vaccines that induce a rapid onset and durable immunity are CEPI’s primary interest. This call also allows consideration of novel immunoprophylactic platforms that may not meet the traditional definition of a vaccine. Because of the fast-moving nature of epidemics, funded platforms must be adaptable to a variety of pathogens with short development timelines and that would allow rapid demonstration of clinical benefit. Improvements of current effective immunoprophylactic platform technologies that render them suitable for outbreak response or that substantially reduce the costs of production and ease of field delivery will also be welcomed.

## 2. Objectives

CEPI funding facilitates the development of vaccines against those EIDs for which the usual commercial incentives for development are inadequate. A strategic objective of CEPI is to advance development of technology platforms that enable a rapid response to protect at-risk populations against EIDs, including a “Disease X” situation (WHO R&D Blueprint, 2018). CEPI is investing in multi-purpose platform technologies to support the reduction of the total response time from recognition of a pathogen to protective immunity in susceptible populations. To address newly emerging threats, rapid product development and immunisation of at-risk populations will be essential.

There are three main approaches to developing immunoprophylactic technologies to be used in cases of outbreaks or epidemics:

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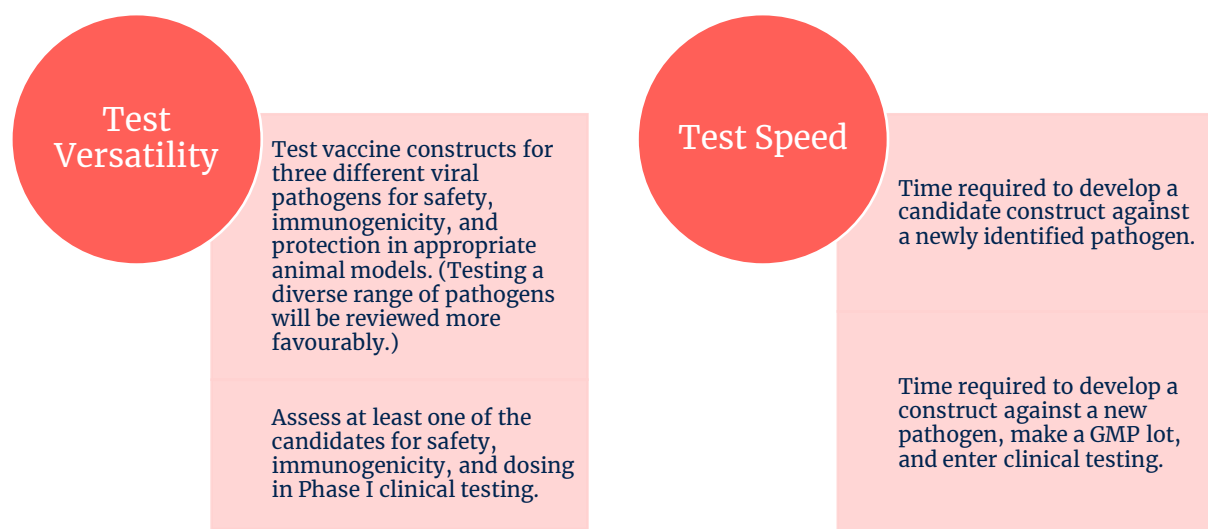
Date: 25.11.2019

- Developing technologies that target individual known pathogens, e.g., using recombinant viral vectors. Two of CEPI's Calls for Proposals (CfP1 and CfP3) addressed this approach.
- Developing multi-purpose platform technologies that are versatile enough to be used against multiple pathogens and that can be characterised so that platforms can be best matched to new or emerging pathogens in hopes of generating a more rapid response.
- Identifying a "prototype pathogen" that represents a family of viruses in the hope that knowledge gained about this prototype will enable a more directed and rapid response in the case of outbreaks or epidemics caused by similar pathogens.

The three approaches should be viewed as complementary and thus this call for EOIs focuses primarily on developing the multi-purpose platform technologies while incorporating aspects of the prototype pathogen approach in the choice of pathogens to test on the platform.

The objective of this Call for Proposals is to develop vaccine and potentially other immunoprophylactic technology platforms that can be used for multiple diseases (including Disease X). The platforms need to demonstrate that they can be adapted to novel antigens, tested, and used to manufacture products quickly in the case of outbreaks or epidemics. This Call supports a broader goal of CEPI which is to transform a selection of the platforms funded in this call into a sustainable toolbox of active platform technologies that are ready for response.

Each platform will be evaluated against several criteria to assess the versatility of the platform across diseases and the speed with which the platform can be developed, tested and produce a pathogen specific response.



CEPI has established *aspirational* targets for the time required to develop a vaccine or other immunoprophylactic platform from availability of pathogen sequence through to manufacture of doses. These are not criteria for the Call but are presented here to provide applicants with some guidance as to the performance we are seeking in technology platforms. The *aspirational* targets for platforms are:

- 16 weeks from antigen identification to product release for clinical trials
- 6 weeks from administration of first dose to achieving an immune response likely to result in a clinical benefit
- 8 weeks to manufacture 100,000 doses – from a “go” decision to production, fill, finish, and release

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Ensuring that vaccines and other immunoprophylactic technologies that can prevent or stop an outbreak are developed is a key part of CEPI's mission. An equally critical part of the mission is to ensure that those technologies are available and accessible equally to those who need them. Thus, in addition to the criteria of speed and versatility the platform technologies must be able to be delivered to individuals easily in an outbreak setting and to be at a cost of goods that does not preclude broad access. See CEPI's Equitable Access policy for more detail.

### 3. Scope of the Call

This Call for Proposals (Step 1) is to identify novel or innovative technology platforms for developing vaccines or immunoprophylactics that can be rapidly adapted for use against emerging threats, including Disease X ([WHO Research and Development Blueprint for Action to Prevent Epidemics](#)). The vaccines or other protective immunoprophylactic strategies should show the ability to be rapidly developed, tested, and produced in the case of outbreaks or epidemics. Demonstration of versatility of the vaccine or immunoprophylactic platform and its suitability for rapid response will be accomplished by characterising the platforms against three different pathogens. The scope of activities that would be supported is aimed at understanding the characteristics of the platform and how the platform will perform against a wide range of pathogens.

To be eligible, the applicant must have at least preclinical immunogenicity data from one pathogen to support the platform. Applicants (individual organisations or consortia) will be asked to include the following information in their EOI:

- plans to generate preclinical safety, immunogenicity and efficacy data for three pathogens that could enable clinical testing
- plans to perform a Phase I clinical trial for at least one selected antigen
- plans to produce at least one Good Manufacturing Practice (GMP) batch for clinical testing and an engineering batch for a second candidate
- plans to integrate gold-standard assays and animal models where they exist in the evaluation

CEPI-supported activities should include demonstration of preclinical safety, immunogenicity and efficacy in relevant animal models including justifying the dose to move into the clinic and plans for a Phase I safety and immunogenicity study in healthy volunteers. Development should include: process development, product analytic assay development, formulation development, stability studies, GMP production, and lot release, noting that these development activities should be completed during the funding period and contribute directly to the vaccine candidates being tested. Development should also include a plan to assess the immunological mechanism of action of the platform and time to protection, which are critical for understanding its utility as a platform. Work already completed prior to the application data should be provided as supporting data.

The choice of pathogens should take the following guidance into account (see Table 1):

- at least 1 pathogen that is on the [WHO Research and Development Blueprint for Action to Prevent Epidemics](#) or watch list, as updated in February 2018
- additional pathogens should be chosen from the well characterised pathogen and prototype pathogen lists. Should they exist, a description of how correlates of protection will be used should be included in the EOI
- variety of pathogens from different viral families will be favourably reviewed

The choice of pathogens will be discussed with applicants who successfully pass through the EOI phase.

Table 1. Pathogens eligible for inclusion

Virus	Family	WHO Blueprint list	Who Blueprint Watch list	Well characterized pathogen	Prototype virus (for the family)
<i>Crimean-Congo Hemorrhagic Fever</i>	Bunyaviridae	x			
<i>Ebola Viral Disease</i>	Filoviridae	x			x
<i>Marburg Viral Disease</i>	Filoviridae	x			x
<i>Lassa Fever</i>	Arenaviridae	x			x
<i>Middle East Respiratory Syndrome Coronavirus (MERS-CoV)</i>	Coronaviridae	x			x
<i>Severe Acute Respiratory Syndrome (SARS)</i>	Coronaviridae	x			x
<i>Nipah</i>	Paramyxoviridae	x			x
<i>Henipaviral Diseases</i>	Paramyxoviridae	x			
<i>Rift Valley Fever (RVF)</i>	Bunyaviridae	x			x
<i>Zika Disease</i>	Flaviviridae	x			
<i>Disease X</i>		x			
<i>Arenaviral Hemorrhagic Fevers</i>	Arenaviridae		x		
<i>Chikungunya</i>	Togaviridae		x		
<i>Highly pathogenic Coronaviral diseases (other than MERS and SARS)</i>	Coronaviridae		x		
<i>Emergent non-polio enteroviruses (including EV71 and D68)</i>	Picornaviridae		x		
<i>Severe Fever with Thrombocytopenia Syndrome (SFTS)</i>	Bunyaviridae		x		
<i>Cytomegalovirus</i>	Herpesviridae			x	
<i>Dengue virus</i>	Flaviviridae			x	x
<i>Enterovirus 71</i>	Picornaviridae			x	
<i>Hepatitis A virus</i>	Picornaviridae			x	x
<i>Hepatitis B virus</i>	Hepadnaviridae			x	x
<i>Hepatitis C virus</i>	Flaviviridae			x	
<i>Hepatitis E virus</i>	Hepeviridae			x	x
<i>Herpes simplex virus</i>	Herpesviridae			x	
<i>HPV 6, 11, 16, and 18</i>	Papillomaviridae			x	x
<i>Influenza virus A and B</i>	Orthomyxoviridae			x	x
<i>Japanese encephalitis virus</i>	Flaviviridae			x	x
<i>Measles virus</i>	Paramyxoviridae			x	x
<i>Norovirus</i>	Caliciviridae			x	x
<i>Poliovirus 1,2, and 3</i>	Picornaviridae			x	x
<i>Rabies virus</i>	Rhabdoviridae			x	x
<i>Respiratory syncytial virus</i>	Pneumoviridae			x	x

<i>Rubella virus</i>	Togaviridae			x	x
<i>Tick-borne encephalitis virus</i>	Flaviviridae			x	x
<i>Vaccinia virus</i>	Poxviridae			x	
<i>Varicella virus</i>	Herpesviridae			x	x
<i>West Nile virus</i>	Flaviviridae			x	
<i>Yellow fever virus</i>	Flaviviridae			x	x
<i>Mumps Virus</i>	Paramyxoviridae				x
<i>Rotavirus</i>	Reoviridae				x
<i>Adeno virus 4 and 7</i>	Adenoviridae				x
<i>Variola virus</i>	Poxviridae				x
<i>Metapneumovirus</i>	Pneumoviridae				x
<i>HIV-1</i>	Retroviridae				x
<i>Bocavirus</i>	Parvoviridae				x
<i>B19 virus</i>	Parvoviridae				x
<i>JC virus</i>	Polyomaviridae				x
<i>BK virus</i>	Polyomaviridae				x
<i>Machupo virus</i>	Arenaviridae				x
<i>Hantavirus</i>	Bunyaviridae				x
<i>Astrovirus</i>	Astroviridae				x

Resources:

- [WHO Blueprint list from February 2018](#)
- Well characterized pathogen list with correlates or surrogates of protection; [Stanley Plotkin; Clinical Infectious Diseases Vol 47 \(2008\)](#), and [Stanley Plotkin; Clinical and Vaccine Immunology Vol 17 \(7\) \(2010\)](#)
- Prototype Pathogen list; [Graham & Sullivan Nature Immunology Vol 19 \(2018\)](#)

## 4. Applicant eligibility criteria

The funding opportunity through this Call is open worldwide to all types of non-profit research organisations, for-profit companies, international organisations and foundations, joint R&D ventures, government research organisations, and academic institutions. Applicants must be legal entities, or consortia comprised of legal entities. At least one of the partners in the applicant organisations or consortia of partnering organisations should have experience in **human vaccine development** and have a track record of bringing vaccine candidates through to human clinical trials in the past 10 years.

To be eligible to submit an EOI, the applicant must have at least preclinical immunogenicity data on the platform using any pathogen.

An EOI will be eligible for review only if it is:

### 1. Aligned with the Call objectives described in section 2.

The EOI needs to describe the technical aspects of the platform technology and all data supporting its use for epidemic preparedness and response. It should also address how the applicant will assess:

- time required from identification of antigen to vaccine candidate
- time to clinical benefit
- time required to manufacture 100,000 doses to impact an emerging outbreak (i.e. from a “Go” decision to scale-up to production, fill, finish, and release)



*Points a. and b. above should be addressed in the proposed scope of work and completed within the funding period. Point c. should be outlined carefully –production of doses beyond what is needed for the clinical trial will not be supported.*

**2. Relevant to the R&D and disease scope as described in sections 3.**

Specifically, the EOI needs to:

- a. Show pre-clinical data on at least one pathogen (any viral pathogen)
  - 1) Preclinical data (immunological data) for one pathogen as a minimum requirement (using relevant animal model)
  - 2) Correlates of protection (if available)
- b. Show preclinical data from all vaccine candidates your group has developed using the proposed vaccine platform demonstrating immunogenicity in a relevant animal model. These data could be based on studies with the pathogens targeted in this call (Table 1), or on another pathogen, ideally an outbreak-prone virus.
- c. Include plans for a total of three target pathogens (using guidance from section 3, Table 1) with the following activities:
  - 3) test proof of concept/efficacy for all three vaccine candidates in animal models in well powered studies
  - 4) develop GMP batch for at least one candidate (to move into the clinic) and one engineering lot for another pathogen
  - 5) test at least one of the candidates into Phase I clinical trials
  - 6) assess the immunological mechanism of action of the platform technology in humans in the Phase I trials.

**3. Consistent with the timeline for the Call and award conditions:**

- a. Major milestones must occur within three years post-award.
- b. Willing to work with CEPI to bring project into compliance with CEPI policies on equitable access (including data sharing), animals in research, and clinical trials conduct

**4. Complete and according to the guidance for the EOI template.**

**5. The submitter has the necessary expertise to perform the proposed activities.**

The CEPI Secretariat will screen the eligibility of the EOIs according to the criteria described above. Applications that do not meet critical eligibility criteria will be excluded from further review.

## **5. Applicant guidelines**

EOIs must include essential evidence as required in the EOI template, meet the presented timeline requirements for completion, contain sufficient detail for review of the proposed product development process. Any claims made within the proposal must be supported by evidence.

The EOI template is accessible via [www.cepi.net](http://www.cepi.net). To respond to this Call for Proposals Step 1, entities must submit their EOI to CEPI via a secure portal. Please send an email to [cfp@cepi.net](mailto:cfp@cepi.net) to be provided with a secure link to upload your EOI to the secure portal. The EOI should be uploaded in pdf format. No additional documents should be submitted. Personal data included in proposals will be handled according to CEPI's Privacy Notice on [www.cepi.net/terms/](http://www.cepi.net/terms/).

For the submissions to be accepted and registered, applications must fulfil the following:

- requirements in section 4 (applicant eligibility criteria) met
- communication of information and documents conducted in English
- budget figures submitted in US Dollars
- the EOI should not exceed 10 pages



**Submissions that exceed the specified page limits outlined in the EOI template or that fail to meet the above criteria will not be considered for further review.**

In case of questions in relation to the submission system, access to the EOI template, or any other issue related to this Call for EOIs, please contact [cfp@cepi.net](mailto:cfp@cepi.net). The CEPI Secretariat will address your questions within the shortest possible timeframe. Any questions submitted, along with answers, will be anonymised and made public.

**No costs incurred by the applicants for the development and submission of EOIs will be covered by CEPI. Furthermore, CEPI will not provide funding retroactively for activities carried out prior to an award.**

### 5.1 Submission and review process

This application process starts with an EOI and is not itself an application for CEPI funding. CEPI will review the EOIs and issue an invitation to submit a full proposal for funding to a limited number of applicants.

Applicants will submit their EOIs via the process outlined above. The review process will start on the 15<sup>th</sup> of each month or the following business day. A review team composed of CEPI staff and external experts will assess compliance with the eligibility criteria (section 4). EOIs not meeting those criteria will not be further reviewed.

CEPI staff and external experts (as needed) will evaluate the eligible EOIs against the review criteria outlined in section 6. Within six weeks after the 15<sup>th</sup> of the submission month, CEPI expects to provide notice to the applicant of either an invitation to proceed to a feedback meeting or that the application was unsuccessful. CEPI will schedule feedback meetings with applicants who submit an EOI of interest to CEPI to discuss a potential project.

If invited to submit a full proposal, the applicant will be provided with further direction and the application templates and will have up to 12 weeks to submit a full funding proposal. An invitation to submit a full proposal does not indicate an obligation on the part of CEPI to fund the applicant's work.

Applicants may resubmit with different or substantially modified EOIs at any time.

### 5.2 Expression of Interest Documents

All documents related to this Call can be found on the CEPI website.

The Expression of Interest template must be used for the submission. Headers for each section and the italicised text explain the information required in that section. Failure to follow the directions of the template will result in the EOI being ineligible for review.

## 6. Review criteria

EOIs that have met the eligibility criteria described under section 4 will be assessed against the following criteria:

Criterion	Assessment levels	Definition
1. Immunogenicity/ Efficacy potential and speed	1.1. Non-clinical 1.2. Clinical 1.3. Speed of protection	<ul style="list-style-type: none"> <li>Extent to which the platform will rapidly enable immune responses providing protection/ clinical benefit against novel emerging infectious diseases</li> </ul>
2. Safety potential	2.1. Non-clinical 2.2. Clinical	<ul style="list-style-type: none"> <li>Safety profile of the platform in animal models and/or in humans</li> </ul>
3. Technical/ Manufacturing scalability and speed	3.1. Quality 3.2. Formulation 3.3. Speed of production and scale	<ul style="list-style-type: none"> <li>Extent to which the platform is expected to enable fast development and production in volumes sufficient to respond to outbreaks of novel emerging infectious diseases</li> </ul>
4. Access/ Route to patient	4.1. Regulatory pathway 4.2. Delivery 4.3. Sustainability of supply 4.4. Equitable access	<ul style="list-style-type: none"> <li>Extent to which the platform will enable uncomplicated delivery of vaccine product in an outbreak response under extreme conditions and that it will remain in use and accessible and affordable to enable responses to newly emerging or unexpected pathogen outbreaks</li> </ul>
5. Partnership	5.1. Competency, experience and track-record 5.2. Quality of the product development plan 5.3. Legal and reputational issues 5.4. Strategic and business obstacles	<ul style="list-style-type: none"> <li>Extent to which the partnership, its plans and procedures are viable and of sufficient quality to deliver on the proposed activities of the project</li> </ul>

## 7. Award conditions (for full proposals)

Before submitting an EOI, applicants should take note of two key award conditions. The first is that each awardee must adhere to CEPI's policies which can be found on CEPI's website. The second is that any funding is dependent on the signing of an award agreement which provides the terms and conditions under which the award will be made. CEPI is committed to achieving equitable access to all CEPI-supported programmes including vaccines, platforms, data, results, and materials. Specifically, equitable access to epidemic vaccines in the context of an outbreak means that appropriate products are first available to populations when and where they are needed to end an outbreak or curtail an

epidemic, regardless of ability to pay. To ensure that CEPI delivers on its commitment to equitable access, CEPI must include access considerations as a component of any agreement with an awardee.

Applicants unable or unwilling to meet these requirements should not submit an EOI.

## **8. Technical and administrative questions**

Technical and administrative questions about this Call should be directed to the CEPI Secretariat ([cfp@cepi.net](mailto:cfp@cepi.net)). A summary of frequently asked questions and answers (FAQs) will be posted on CEPI's website in a timely manner.